

COATING, MODIFICATION AND ETCHING OF SUBSTRATE SURFACE
WITH PARTICLE BEAM IRRADIATION OF THE SAME

ABSTRACT OF THE INVENTION

There is provided a method of applying a surface
5 treatment, such as coating, denaturation, modification and
etching, to a surface of a substrate. The method comprises
the steps of bringing a surface treatment gas into contact
with a surface of a substrate, and irradiating the surface
of the substrate with a fast particle beam to enhance an
10 activity of the surface and/or the surface treatment gas
thereby facilitating the reaction between the surface and
the gas. The fast particle beam may be selected from a
group consisting of an electron beam, a charged particle
beam, an atomic beam and molecular beam. For example, in a
15 coating operation, chemically deposition of predetermined
component elements of the gas onto the surface is effected
and a predetermined portion in the surface of the substrate
is irradiated with a particle beam to form a coating layer
on the predetermined portion.